**In the Claims:**

Claims 1-73 (Cancelled). cancel 6.

74. (Currently Amended) A double-resonance absorption microscope, comprising:

a pump light source for emitting a pump light having a wavelength $\lambda_1$ so as to excite a sample molecule from a ground state to a first electronic excited state;

an erase light source for emitting an erase light having a wavelength $\lambda_2$ so as to excite the sample molecule from the first electronic excited state to at least a second electronic excited state;

an overlap component for partially overlapping irradiating areas of the pump light and the erase light with each other so that an emission area is partially inhibited during de-excitation of the sample molecule from the first electronic excited state to the ground state by irradiating the pump light and the erase light through ~~the~~ said overlap component; ~~and~~

a spatial filter located on an optical path of the erase light to be emitted from said erase light source, said spatial filter including a condenser lens, a collimate lens, and a pinhole located between said condenser lens and said collimate lens, wherein said condenser lens, said collimate lens, and said pinhole are arranged so as to condense the erase light into said pinhole, to collimate the erase light having passed through said pinhole into a parallel beam, and to suppress wavefront disturbance of the erase light ~~for producing a first-order Bessel beam from the erase light~~; and

a phase modulation element for providing the erase light having passed through said spatial filter with a phase difference of $\pi$ around an optical axis of the erase light so as to produce a first-order Bessel beam.

Claims 75 and 76 (Cancelled). c.

77. (Currently Amended) The double-resonance absorption microscope of claim ~~76~~ 74, wherein said phase modulation element comprises a substrate transparent and optically flat with respect to the erase light, and comprises an optical thin film evaporated on said substrate such that said optical thin film has a thickness distribution for providing the erase light with the phase difference of $\pi$ around the optical axis of the erase light.

78. (Currently Amended) The double-resonance absorption microscope of claim ~~76~~ 74, wherein said phase modulation element comprises a substrate transparent and optically flat with respect to the erase light, said substrate being etched so as to be operable to provide the erase light with the phase difference of $\pi$ around the optical axis of the erase light.

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79. (Previously Presented) The double-resonance absorption microscope of claim 78, wherein said erase light source is operable to emit erase light having a pulse width wider than a pulse width of the pump light, said pump light source and said erase light source being operable to emit pump light and erase light, respectively, such that an irradiation duration of the pump light completely overlaps an irradiation duration of the erase light.

80. (Previously Presented) The double-resonance absorption microscope of claim 79, further comprising a pulse width controller for widening the pulse width of the erase light so that the pulse width of the erase light is wider than the pulse width of the pump light.

81. (New) The double-resonance absorption microscope of claim 80, wherein said pulse width controller comprises a pulse stretcher optical system including:

a half mirror for providing light separation; and

a reflection optical system for forming a loop optical path including said half mirror thereon.

82. (New) The double-resonance absorption microscope of claim 79, further comprising an irradiation timing controller for controlling a timing of the pump light and the erase light reaching the sample molecule so that an irradiation duration of the pump light completely overlaps an irradiation duration of the erase light.

83. (New) The double-resonance absorption microscope of claim 82, wherein said irradiation timing controller is operable to control an optical path difference of the pump light and the erase light so as to control the timing of the pump light and the erase light reaching the sample molecule.

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84. (New) The double-resonance absorption microscope of claim 82, wherein said pump light source comprises a pump light pulse laser and said erase light source comprises an erase light pulse laser independent of said pump light pulse laser, said irradiation timing controller being operable to control a Q-switch of each of said pump light pulse laser and said erase light pulse laser so as to control the timing of the pump light and the erase light reaching the sample molecule.

85. (New) The double-resonance absorption microscope of claim 74, wherein a sample is dyed with a fluorescent labeler molecule having at least three electronic states including a ground state, the sample molecule comprising the fluorescent labeler molecule.

86. (New) The double-resonance absorption microscope of claim 74, wherein at least one of said pump light source and said erase light source comprises a solid dye laser including:

a solid laser medium wherein a dye molecule having more than two quantum levels is dispersed; and

a short pulse laser for exciting said solid laser medium.

87. (New) A double-resonance absorption microscope, comprising:

a pump light source for emitting a pump light having a wavelength $\lambda_1$ so as to excite a sample molecule from a ground state to a first electronic excited state;

an erase light source for emitting an erase light having a wavelength $\lambda_2$ so as to excite the sample molecule from the first electronic excited state to at least a second electronic excited state;

overlap means for partially overlapping irradiating areas of the pump light and the erase light with each other so that an emission area is partially inhibited during de-excitation of the sample molecule from the first electronic excited state to the ground state by irradiating the pump light and the erase light through said overlap means;

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spatial filtering means located on an optical path of the erase light to be emitted from said erase light source, said spatial filtering means including a condenser lens, a collimate lens, and a pinhole located between said condenser lens and said collimate lens, wherein said condenser lens, said collimate lens, and said pinhole are arranged so as to condense the erase light into said pinhole, to collimate the erase light having passed through said pinhole into a parallel beam, and to suppress wavefront disturbance of the erase light; and

phase modulation means for providing the erase light having passed through said spatial filtering means with a phase difference of $\pi$ around an optical axis of the erase light so as to produce a first-order Bessel beam.

88. (New) The double-resonance absorption microscope of claim 87, wherein said phase modulation means comprises a substrate transparent and optically flat with respect to the erase light, and comprises an optical thin film evaporated on said substrate such that said optical thin film has a thickness distribution for providing the erase light with the phase difference of $\pi$ around the optical axis of the erase light.

89. (New) The double-resonance absorption microscope of claim 87, wherein said phase modulation means comprises a substrate transparent and optically flat with respect to the erase

light, said substrate being etched so as to be operable to provide the erase light with the phase difference of $\pi$ around the optical axis of the erase light.

90. (New) The double-resonance absorption microscope of claim 89, wherein said erase light source is operable to emit erase light having a pulse width wider than a pulse width of the pump light, said pump light source and said erase light source being operable to emit pump light and erase light, respectively, such that an irradiation duration of the pump light completely overlaps an irradiation duration of the erase light.

91. (New) The double-resonance absorption microscope of claim 90, further comprising pulse width control means for widening the pulse width of the erase light so that the pulse width of the erase light is wider than the pulse width of the pump light.

92. (New) The double-resonance absorption microscope of claim 91, wherein said pulse width control means comprises a pulse stretcher optical system including:

a half mirror for providing light separation; and

a reflection optical system for forming a loop optical path including said half mirror thereon.

93. (New) The double-resonance absorption microscope of claim 90, further comprising an irradiation timing control means for controlling a timing of the pump light and the erase light reaching the sample molecule so that an irradiation duration of the pump light completely overlaps an irradiation duration of the erase light.

94. (New) The double-resonance absorption microscope of claim 93, wherein said irradiation timing control means is operable to control an optical path difference of the pump light and the erase light so as to control the timing of the pump light and the erase light reaching the sample molecule.

95. (New) The double-resonance absorption microscope of claim 93, wherein said pump light source comprises a pump light pulse laser and said erase light source comprises an erase light pulse laser independent of said pump light pulse laser, said irradiation timing control means being operable to control a Q-switch of each of said pump light pulse laser and said erase light pulse laser so as to control the timing of the pump light and the erase light reaching the sample molecule.

96. (New) The double-resonance absorption microscope of claim 87, wherein a sample is dyed with a fluorescent labeler molecule having at least three electronic states including a ground state, the sample molecule comprising the fluorescent labeler molecule.

97. (New) The double-resonance absorption microscope of claim 87, wherein at least one of said pump light source and said erase light source comprises a solid dye laser including:

a solid laser medium wherein a dye molecule having more than two quantum levels is dispersed; and

a short pulse laser for exciting said solid laser medium.